

REMARKS

The applicant respectfully requests reconsideration in view of the amendment and the following remarks. The applicant has corrected a typographical error in claim 1. The applicant has changed the period "." to a comma "," after the herbicide "mecoprop-P".

Claims 1, 3-18, 20-28, 30-39, 41-48, 50-65, 82-85, 87, 89 and 91 were rejected as being obvious over USPN 5,558,806 ("Policello") and USPN 5,078,782 ("Nielson"). The applicant respectfully traverses this rejection.

The Examiner is focusing on prior art that taught the use of 2,4-D acid in combination with a surfactant. The applicant does not believe that Policello teaches anything about 2,4-D in the acid form. Assuming arguendo, that Policello teaches ANYTHING about 2,4-D acid, there is still no motivation to omit a solvent. As stated in the Declaration previously submitted executed by Johnnie Roberts, silicone surfactants according to Policello are unstable in the inherent acidic conditions according to the applicant's claimed invention (see the Declaration executed May 13, 2008). In particular, see paragraph no. 24 of the declaration which states, "... the acid herbicide would not be able to fully dissolve in the silicone surfactant according to Policello, without significant degradation of the silicon surfactant."

The following two examples of prior art that Examiner has previously considered:

1. AF-300 This formulation was what one of ordinary skill in the art would do if his intention was to formulate a combination of 2,4-D acid and a surfactant. As the applicant's previous declaration demonstrated, the formulation experts at Nufarm had to employ a conventional solvent (petroleum distillates) to dissolve the 2,4-D acid. They did not test higher and higher levels of surfactant to try and dissolve the 2,4-D acid because to one of ordinary skill in the art, that would make no sense.
2. Weedone 638 This formulation was disclosed in the applicant's specification at page 2, lines 13-20. In this formulation, the surfactant again is

not sufficient to dissolve the 2,4-D acid. The 2,4-D ester and the petroleum distillates are used to dissolve the 2,4-D acid. Again, the formulation experts at the time did not try to raise the surfactant levels in this formulation to dissolve the 2,4-D acid. To one of ordinary skill in the art, that would have made no sense. It made more sense to increase the amount of petroleum distillates.

The Examiner has stated at the bottom of page 3 of the Office Action:

[i]t would have been obvious to one of ordinary skill in the art to combine the compositions taught in USPN '806 and '792 to arrive at an invention comprising 2,4-D, ester of 2,4-D a mineral oil or methylated soybean oil a **polyalkyleneoxide polysiloxane**¹ and an aromatic solvent. It would have been obvious [to] for one try this combination since both individual patents teach the same utility.
(emphasis added)

In the office Action, the Examiner has not addressed where the prior art teaches that the acid herbicide is fully dissolved in the surfactant as is required by the applicant's claimed invention. This is an important feature of the applicant's claimed invention. Neither Policello nor Nielson teach this feature.

The applicant believes that no formulation chemist of ordinary skill in the art would have tried to dissolve the herbicide in anything but more solvent, like petroleum distillates.

To describe the ordinary skill in agricultural formulations, one can find numerous references. In 1997, a multi-industry, international forum was held to discuss formulation

¹ It is noted that the applicant's claims no longer require polyalkyleneoxide polysiloxane. This is recognized by the Examiner on page 4 of the Office Action. On page 4, first paragraph of the Office Action, the Examiner states that the silicone surfactants have been excluded from the applicant's claims, because "polysiloxane" surfactant has been deleted from the claims. It is true, the applicant has deleted "polysiloxane" from the claims, **therefore the applicant's claims no longer require polysiloxane, but the claims do not exclude polysiloxane.**

chemistry across several industries. Dr. Kozo Tsuji of Sumitomo provided an overview of the state of the art in pesticide formulations. The proceedings from this forum are bound in a book entitled **Formulation Science**.

Dr. Tsuji's chapter discloses the following details on pesticide formulations:

Page 57 cites potential improvements in EC's as:

"Use water, convert to solid formulations or change the solvents or the emulsifiers."

Nowhere does the **Formulation Science** of the day indicate that the emulsifiers (a.k.a surfactants) might actually be one and the same as the solvent.

Page 60 shows a typical **emulsifiable in water formulation (EW)**:

Line 14 "Solid pesticides are dissolved at first in water-insoluble organic solvents, and then dispersed in water."

Page 61 describes a **suspension concentrate (SC)**. In these formulations, the pesticide is suspended and not dissolved.

Page 62 describes a **Suspoeulsion (SE)**. In these formulations, one active ingredient is formulated with traditional organic solvents in the same manner as an **EW**. This emulsifiable concentrate is then suspended in another water based suspension that has been formulated in the same manner as an **SC**.

Page 63 describes a **Microemulsion (ME)**. As with **EW** formulations, solid active ingredients are first dissolved in organic water immiscible solvents. Emulsifiers (surfactants) are then added to produce an emulsion.

Page 63-64 describes a **Multiple Emulsion**. This formulation type is produced in much the same manner as **EW** formulations but said **EW** is further emulsifier in water to reduce formulation toxicity.

Other formulations described in page 64-65 of this review are solid formulations and thus irrelevant.

Another reference to establish the “ordinary skill in the art” is found in Purdue University’s publication **Pesticides and Formulation Technology**. This publication discusses on page 15 the normal formulation process for active ingredients. Specifically, an appropriate solvent is selected, and only then are appropriate emulsifiers (surfactants) selected.

Yet another reference is used to establish the “ordinary skill in the art” is found in Rhodia’s **Auxiliaries for agrochemical formulations**. In section 3-2, emulsifiable concentrate formulations are described. In short, for a liquid pesticide formulation that will mix with water, you normally have three components:

- The active ingredient
- A solvent
- Emulsifiers (surfactants)

The Examiner has a burden to demonstrate the motivation for one of ordinary skill in the art to increase the surfactant to the point where the acid herbicide fully dissolves.

- The only similar acid herbicide formulations available employed the use of traditional solvents to dissolve the active.
- No other formulations have been shown that use surfactants to fully solubilize ANY active ingredients.
- Descriptions of typical formulations in the field always employ a solvent of some kind that is separate from optional surfactants.
- The Examiner has not provided one instance of a combination of ANY herbicide and ANY surfactant wherein the herbicide was fully solubilized in the surfactant, or further which excluded a traditional solvent (i.e. water, petroleum distillate).

Furthermore, the Examiner stated at page 4 of the Office Action,

The Applicants argue that the polysiloxane (silicone based) surfactant disclosed by Policello is unstable in acidic conditions, below pH 5. The Applicants direct the Examiner's attention to USPN 6300283 to support the instability of the instant polysiloxane at acidic pH. The Applicants state, 'While not specifically disclosed in the in the applicant's application, the compositions the applicant describes have pH ranges generally well below 5.0.' The Applicants refer the Examiner's attention to a Declaration and ASTM Publication STP 1234 filed 5/13/08 to support the instability of the polysiloxane at low pH. The Examiner argues that a pH requirement is not specified in the claims. (emphasis added)

The applicant respectfully believes that the Examiner has misunderstood the purpose of the declaration and the purpose of submitting USPN 6300283. The applicant's claims inherently have a pH claimed contrary to what the Examiner has asserted. The applicant claims that the herbicide is in "acid form". To be in the acid form the herbicide must have a pH less than 7. For the chlorinated carboxylic acid herbicide to be fully in the acid form, it must be formulated

with the knowledge of the pKa for that herbicide. One of ordinary skill in the art would know that the following chlorinated carboxylic acid herbicide have the following pKa's².

Chlorinated carboxylic acid herbicide	pKa
2,4-dichlorophenoxy acetic acid	2.8
2,4-dichlorophenoxy butyric acid	4.8
Clopyralid	2.3
Dicamba	1.87
Dichlorprop	2.86
Fluroxypyr	
Mecoprop	
Picloram	2.3
Quinclorac	4.34
Triclopyr	2.68

Furthermore, the applicant recognized that Policello does acknowledged 2,4-D and dicamba are in the laundry list of pesticides at col. 6, line 25- col. 8, line 53, in particular at col. 6, lines 27-29 and 35. However, the applicant respectfully does not believe that Policello intended to dissolve 2,4-D in the ACID form or dicamba in the ACID form in the silicon surfactants of Policello. As stated in the declaration from Johnnie Roberts executed May 13, 2008,

² The pKa's are cited in U.S. Patent No. 6,906,004 at cols. 5 and 6.

“Therefore the acid herbicide would not be able to fully dissolve in the silicone surfactant according to Policello, without significant degradation of the silicon surfactant.”

The purpose of the declaration executed May 13, 2008 and submitting USPN 6300283 was to show that Policello did not consider using a herbicide in the acid form. Even if the herbicide was in the acid form it could not fully dissolve in the surfactant of Policello “without significant degradation of the silicon surfactant”. For the above reasons, this rejection should be withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 00306-00142-USA from which the undersigned is authorized to draw.

Dated: November 13, 2008

Respectfully submitted,

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Enclosure: Formulation Science
Pesticides and Formulation Technology
Rhodia's Auxiliaries for agrochemical formulations